Abstract

The present invention relates to a multitube fixed bed reactor and the use of such a reactor for carrying out catalytic gas-phase reactions, in particular for carrying out exothermic and endothermic catalytic gas-phase reactions such as the preparation of phthalic anhydride (PA), acrylic acid, methacrylic acid (MAA), acrolein, maleic anhydride (MA), glyoxal, phosgene, hydrocyanic acid or vinyl formamide (VFA). In a relatively large multitube reactor in which a large amount of heat of reaction is generated owing to the numerous catalyst tubes (17) and has to be removed, it is proposed that the ratio of tube spacing t to external tube diameter d_a be made dependent on the reactor diameter or on the external tube bundle diameter d_{RBa}. At an external diameter of the catalyst tube bundle (18) of more than 4 meters, a ratio of tube spacing d to external tube diameter d_a of at least 1.3 is preferred.